

Information technology support for your local university community

Presentation for IT staff of TU- Darmstadt

Craig A. Stewart, Ph.D.

Executive Director, Pervasive Technology Institute
Associate Dean, Research Technologies
Indiana University

30 June 2013



**RESEARCH
TECHNOLOGIES**

INDIANA UNIVERSITY
University Information Technology Services



**PERVASIVE TECHNOLOGY
INSTITUTE**

INDIANA UNIVERSITY

License Terms

- Please cite as: Stewart, C.A. 2014. Information technology support for your local university community - Presentation for IT staff of TU-Darmstadt. Presentation. Presented at Technische Universitaet Darmstadt, Darmstadt, Germany, 30 June 2014.
<http://hdl.handle.net/2022/18475>
- Items indicated with a © are under copyright and used here with permission. Such items may not be reused without permission from the holder of copyright except where license terms noted on a slide permit reuse.
- Except where otherwise noted, contents of this presentation are copyright 2014 by the Trustees of Indiana University.
- This document is released under the Creative Commons Attribution 3.0 Unported license (<http://creativecommons.org/licenses/by/3.0/>). This license includes the following terms: You are free to share – to copy, distribute and transmit the work and to remix – to adapt the work under the following conditions: attribution – you must attribute the work in the manner specified by the author or licensor (but not in any way that suggests that they endorse you or your use of the work). For any reuse or distribution, you must make clear to others the license terms of this work.



- Background about myself and about IU
- Some accomplishments in general IT services
- Some examples supporting research
- Big Red II implementation as an example of community building
- Some lessons learned after almost two decades of pursuing basically one strategy computing



Key Events in my Professional History

1981	Graduated with BA in biology and mathematics from Wittenberg University (Springfield, OH). Started as graduate student at Indiana University in biology.
1982	Met Marion Krefeldt (in Bremen geboren)
1984	Switched from being teaching assistant in biology to assistant consultant with Bloomington Academic Computing Services, starting with Lotus 1-2-3 Key Disks.
1985	Full-time appointment at BACS Information Center (Service Desk).
1986	Manager, Business Computing Facilities (IU School of Business), finished Ph.D. in Biology
1991	Manager, Center for Statistical and Mathematical Computing (UCS).
1995	Manager, University Computing Services Support Center.
1996-7	Senior Manager, Assistant Director, Acting Director, Director research and academic computing
1997	Michael McRobbie arrived at IU from the supercomputing center at ANU to become IU's first full VP for IT and CIO and reorganized IT organization into University Information Technology Services.
1997	US Dept. of Commerce imposes a 4X tariff on purchase of Japanese supercomputers within the US. (Stewart convinces his boss that going to Germany is the best way to learn about Japanese supercomputers)
2005	April Fool's Day: Promoted to Associate Vice President for Research and Academic Computing and COO of Pervasive Technology Labs
2008	Associate Dean for Research Technologies, Executive Director of Pervasive Technology Institute.
	<i>Key point: I have been around a long time – from when IU was unimportant in IT to when IU was sued by Metallica to having the #23 system on the Top500 list. Long enough to see technological and cultural change happen at IU, lead some of it, and learn from all of it</i>

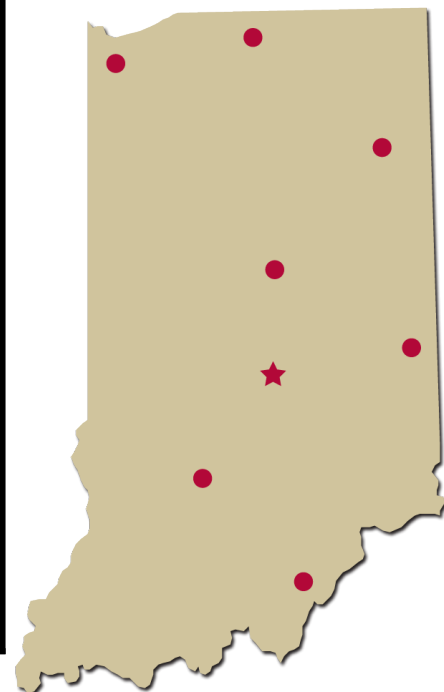




IU – Founded in 1820

6

Campus	Academic appointees	Nonacademic Staff	Undergrad Students	Grad. & Prof. Students
IUB	2,942	5,379	32,371	9,762
IUPUI	3,895	4,449	22,271	8,180
IU Northwest	425	243	5,636	548
IU South Bend	542	305	7,860	630
IU East	267	159	4,052	134
IP Fort Wayne	N/A	N/A	N/A	N/A
IU Kokomo	191	138	3,581	138
IU Southeast	498	243	6,203	701
Totals	8,760	10,916	81,974	20,093



1,200 degree programs

IU community: 121,743 people total

1.2 million credit hours per semester

Two core research/education campuses, six regional campuses

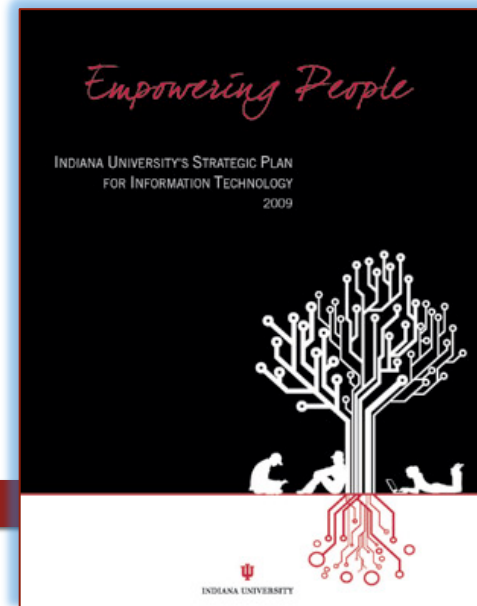
Tuition and mandatory fees per year: \$10,209 FY 13/14 for IUB Undergrads

IU Bloomington campus about the same size as TU-Darmstadt



IU goals

- To be a leader, “in absolute terms for uses and applications of IT” (Myles Brand, 16th President of IU, 1996)
 - In 1996 IT services at IU were so bad people laughed at this goal
 - Modems were always busy
 - Research computing was inadequate
 - Services were not well organized
- Two IU IT Strategic Plans
 - 1997 plan – get technology right
 - 2005 plan – serve needs of IU community specific to different roles
- To be one of the great public universities of the 21st Century (Michael A. McRobbie, 18th President of IU, 2005)



Some accomplishments in general IT services



Some foundations

Networking – now almost completely centralized

- Within the university
- Outbound from the university
- University-level firewalls

Security

- Scans
- Firewalls
- Centralization
- ...and still we have problems

Identity management – almost entirely centralized

Purchasing – coordinated through Purchasing



Internet2 and InCommon

Internet2


- started as network organization
- Serves hundreds of universities in the US
- First production 100 Gbps network backbone in US
- Someday there will be no reason to have Internet2 run networks

InCommon

- Meets two needs:
 - Identity management
 - Creates reason for Internet2 to continue existing
- Based on legal certification of quality of local identity management
- Uses XSAML certificates and authentication management
- Supports collaboration
- E.g. Box



Starting in 1995, users were trained to consult the knowledge base first: “Do you have a web browser? Great. Go to <http://kb.iu.edu>. Got it? Great. Search on <whatever>. See the question Entitled <something>? Great. Read it, follow the directions, call us back if you have any more problems.

 INDIANA UNIVERSITY

University Information Technology Services

KNOWLEDGE BASE


Login>>

[Home](#) [Menus](#) [Glossary](#) [Help](#)

Showing Documents 1 - 4 out of 4 for 'eduroam' .

- About eduroam at Indiana University
- As an IU user, how can I connect to eduroam at another institution?
- IP addresses at IUB and IUPUI
- About wireless connections to the Internet at IU

Search: ☒ Knowledge Base ☐ IU

☐ Include archived documents  Search results per page


Text size: [A](#) [A](#) [A](#)

Chat with a consultant

ITHelpLive

 (IU login required)

Available 24 hours a day, 7 days a week

 [UITS Services and Support](#) | [About the Knowledge Base](#) | [KB Comments](#)
Copyright 2005-2013, The Trustees of Indiana University | [Copyright Complaints](#)



If you are prompted to accept any security certificates, verify that:

- The certificate is signed by "Thawte Premium Server CA" or "thawte Primary Root CA".
- The certificate name is `net-auth-1.noc.iu.edu` .

[Back to top](#)

This is document bcdx in domain all.

Last modified on May 03, 2013.

✓ I need help with a computing problem

- Fill out this form to submit your issue to the [UITS Support Center](#).
- Please note that you must be affiliated with Indiana University to receive support.
- All fields are required.

Full name:

Email address:

Please provide your IU email address. If you currently have a problem receiving email at your IU account, enter an alternate email address.

Relationship to Indiana University:





PC

Mac

Linux

Featured Software

SOFTWARE

Academic Resources

Analysis & Modeling

Databases

Design & Production

Development Tools

Multimedia

Network & Printing

Office Tools

Operating Systems

Retired

Security

Utilities

Web & Email

TRAINING

UITS IT Training

Download Workshop Materials

All Self-Study Options



Office 2013

Office Professional Plus 2013. Includes Access, Excel, OneNote, Outlook, PowerPoint, Publisher, and Word.



Windows 8

The latest version of Windows. Only \$20 from the IU bookstore.



Acrobat XI

Edit PDFs far more intuitively. Build forms from scratch in minutes. And more.



Creative Suite 6

Adobe Creative Suite 6 delivers a whole new experience for digital media creation, enabling you to work lightning fast and reach audiences wherever they may be.



UITS Network Repair Tool

Helps troubleshoot and resolve network issues when connecting to IU network.



IU Wireless Wizard

Configure your computer to use the IU secure wireless network.

Most Popular Downloads

Office 2013

Creative Suite 6

Symantec Endpoint Protection

Latest Releases

08/08/2013 - TurningPoint 5

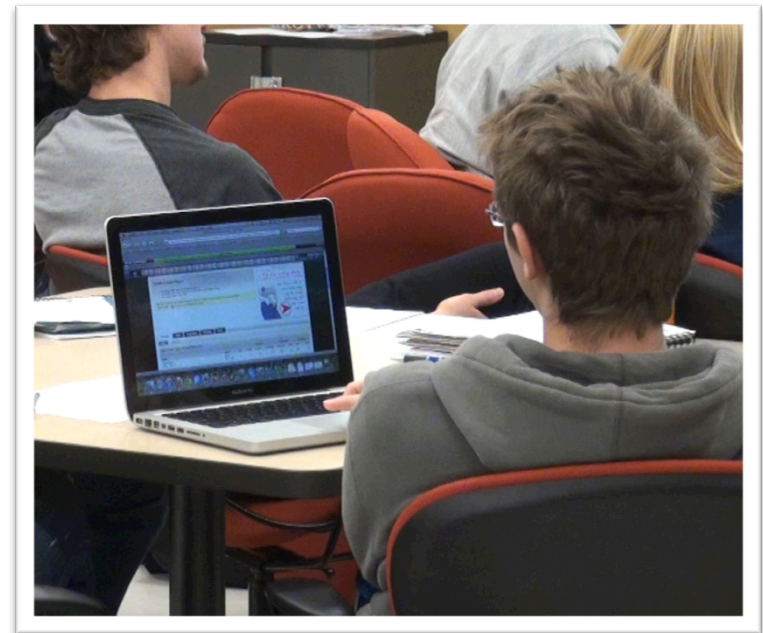
08/08/2013 - ArcPad 10.2

08/08/2013 - ArcGIS Server 10.2



A New Personal Computing Model: Common Good Services

- Microsoft SCCM for managing the machines
- IUanyWARE – Citrix for application and desktop virtualization
- Support for smart devices
- New model of licensing
- Efficiency and effectiveness
- A new model for student labs
- Public and private cloud storage
- Efficient file/print serving



Then (1998-ish)

- Central IT Organization (UITs)
 - Phone support, walk in
 - Web-based knowledgebase
 - Licensing of commonly used software, vendor deals for hardware
- Local Support Providers
 - Mostly worked for individual departments
 - Certified as qualified and trained by central IT organization
 - Low effectiveness of groups of LSPs

Now

- Central IT Organization (UITs)
 - Phone support, walk in, **chat**
 - Web-based knowledgebase
 - IUanyWARE – SaaS delivery of desktops in addition to software licenses
- IT Professionals
 - Fewer and fewer work for any organization other than the central IT organization
 - IT Professional groups formal, key partners with central IT organization



Physical textbooks are part of an economic game in which students are generally the losers.

Agreements so far: Cengage Learning, Elsevier Science & Technology Books, Flat World Knowledge, Harvard Business School Publishing, IU Press, MacMillan, McGraw Hill, Pearson, SAGE, Wiley, and W.W. Norton.

Students “lease” access and the cost is included as a course fee,
Students gain in ease of access, cost, ability to use the text integrated with eLearning system.

Publishers gain since it puts an end to students using the text without paying.

Faculty have more e-publishing options.

Opt in – Students gain in ease of access, cost, ability to use the text integrated with the eLearning system – ~10,000 students in 250 classes, spring 2013.

Analytics capability added through third-party software.



The Kuali Foundation – Community-source business function applications

The Kuali Foundation provides an efficient way to pool investments and achieve sustainable software at a total cost of ownership that is **superior to all other options.**



- More than 70 education-focused organizations collaborating to build software that solves the challenges of higher-education ERP.
 - Member organizations invest money, resources, and development toward eight software products/services.
 - This collaboration is delivering a full suite that meets the specific needs of ERP for higher-education institutions.
 - Kuali software cannot be taken away, closed down, or discontinued as a product line.
 - Product destiny is in the hands of the educational community. IU has saved \$20M to date with Kuali.
- ### Kual Foundation At A Glance
- \$25M organization
 - \$100M+ invested in product dev
 - **8 software systems: financial, HR, research, etc...**
 - 70+ member institutions
 - 50+ implementations
 - 10 commercial affiliates – Commercially available support



Some Cloud Services as well!



Box

Powered by: 

login

Box is designed as a flexible storage service and collaboration tool, but is not acceptable for any institutional data classified as "limited access/restricted" or "critical".

Please review the [Enterprise Box acceptable use responsibilities](#) for more information.

[Terms of Use](#)

[Help](#)

Tweets

 Follow



Box @ IU

@BoxAtIU

27 Jun

@BoxHQ never sleeps. New changes coming to the Box interface. See support.box.com/hc/en-us/artic... for details.

Expand



Box @ IU

@BoxAtIU

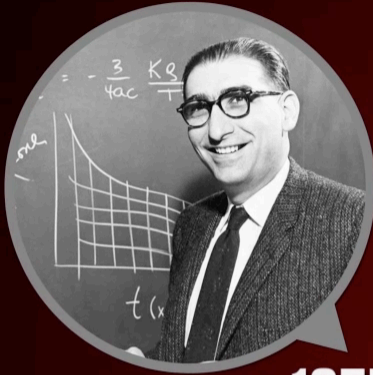
24 Jun

Have you upgraded to Firefox 30? If so, you must go in and activate plugins

A bit about research!

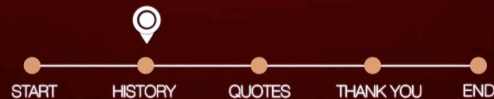


Early history sets the stage

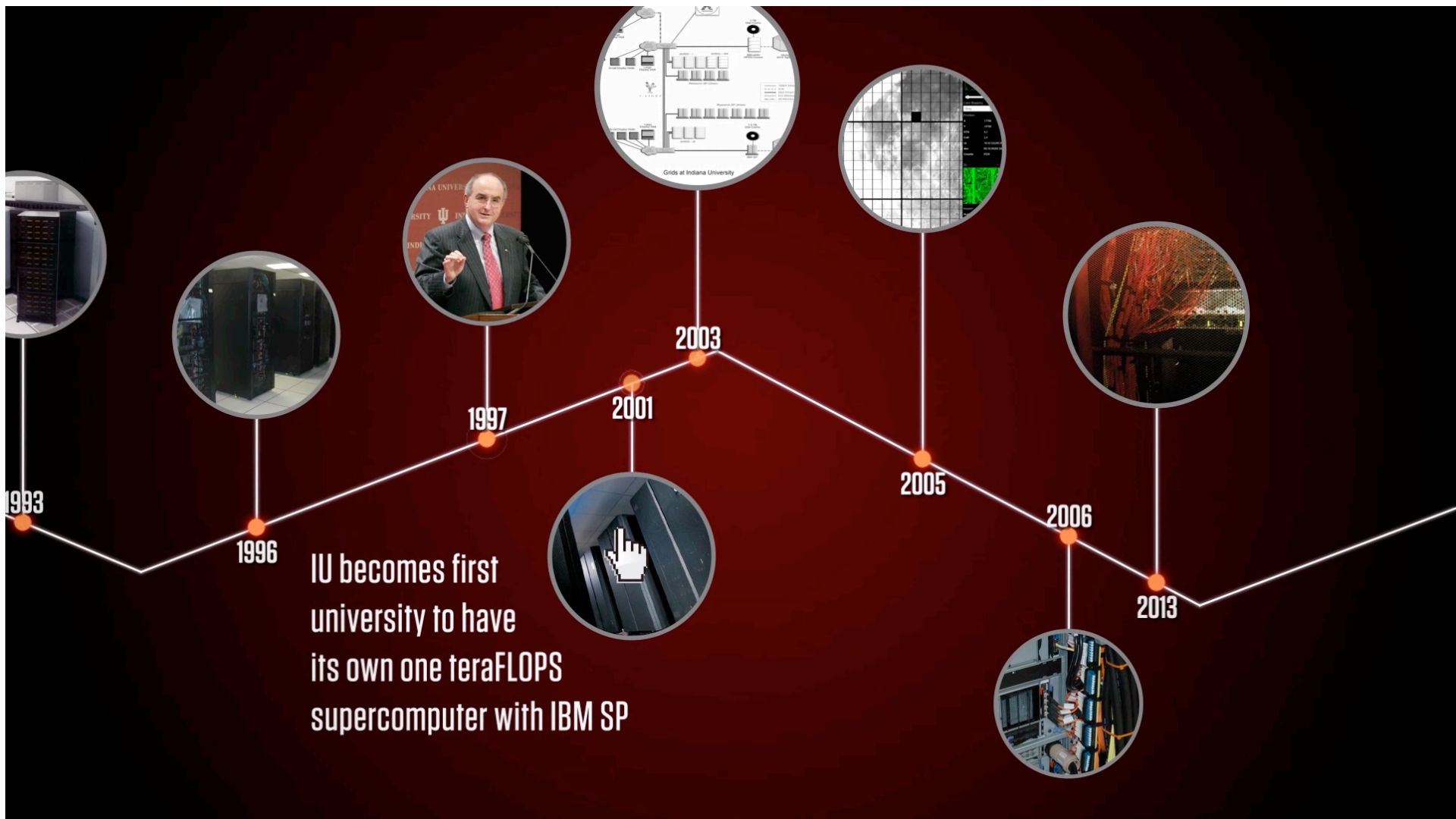


Marshal Wrubel becomes first
permanently appointed director of
IU's Research Computing Center

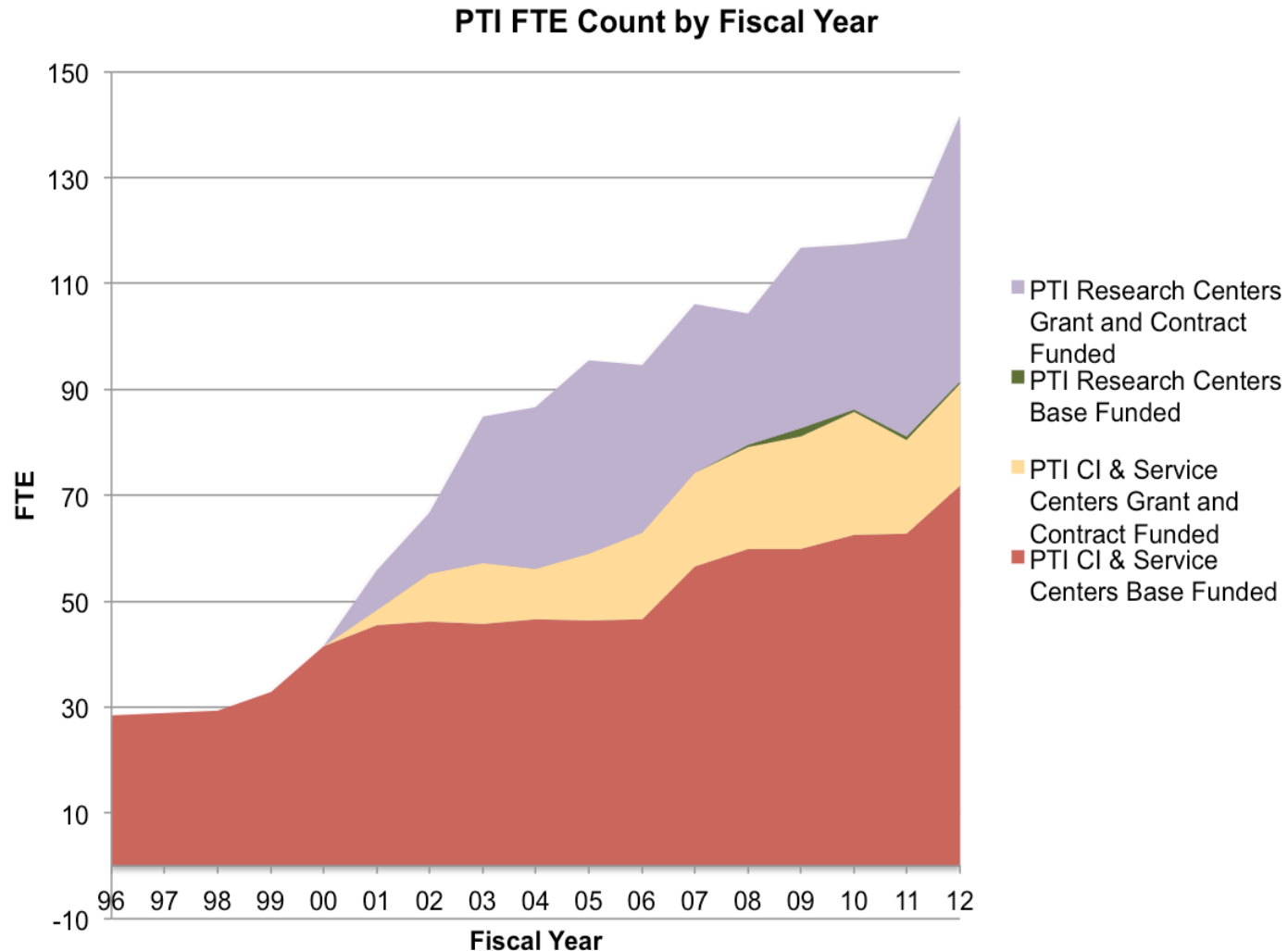
1955



And then things really accelerated...



From not much at all to a mid-sized research computing center
(computer center is overall ~ 900 staff on 8 campuses – this is the
research portion)



We've supported some interesting and important research and creative activity along the way.

Early successes:

Industrial mold filling

Data-driven computing cluster

Fetal alcohol spectrum disorder

Phylogenetics

More recent:

Higgs boson

One-Degree Imager

Operation Ice Bridge

Daphnia genome

Indiana CTSI

History of science

Ethnography

Music composition

Fine arts

Performing arts



M51 - WHIRLPOOL GALAXY

K. RHODE, M. YOUNG, INDIANA UNIVERSITY/WIYN/NOAO/NSF





- Working with Cummins exploring combustion of new biofuels
- How are soot particles created during and after combustion
- Collaborating with Convergent Sciences, maker of the popular Converge CFD application, and Lawrence Livermore National Lab



What is the mission of the Research Technologies Division?

The mission of the Research Technologies division of UITs is to develop, deliver and support advanced technology solutions that improve the productivity of and enable new possibilities in research, scholarly endeavors, and creative activity at Indiana University and beyond; and to complement this with education and technology translation activities to improve the quality of life of people in Indiana, the nation, and the world.

We are a mission- and value-driven organization. We are not a technology-driven organization.

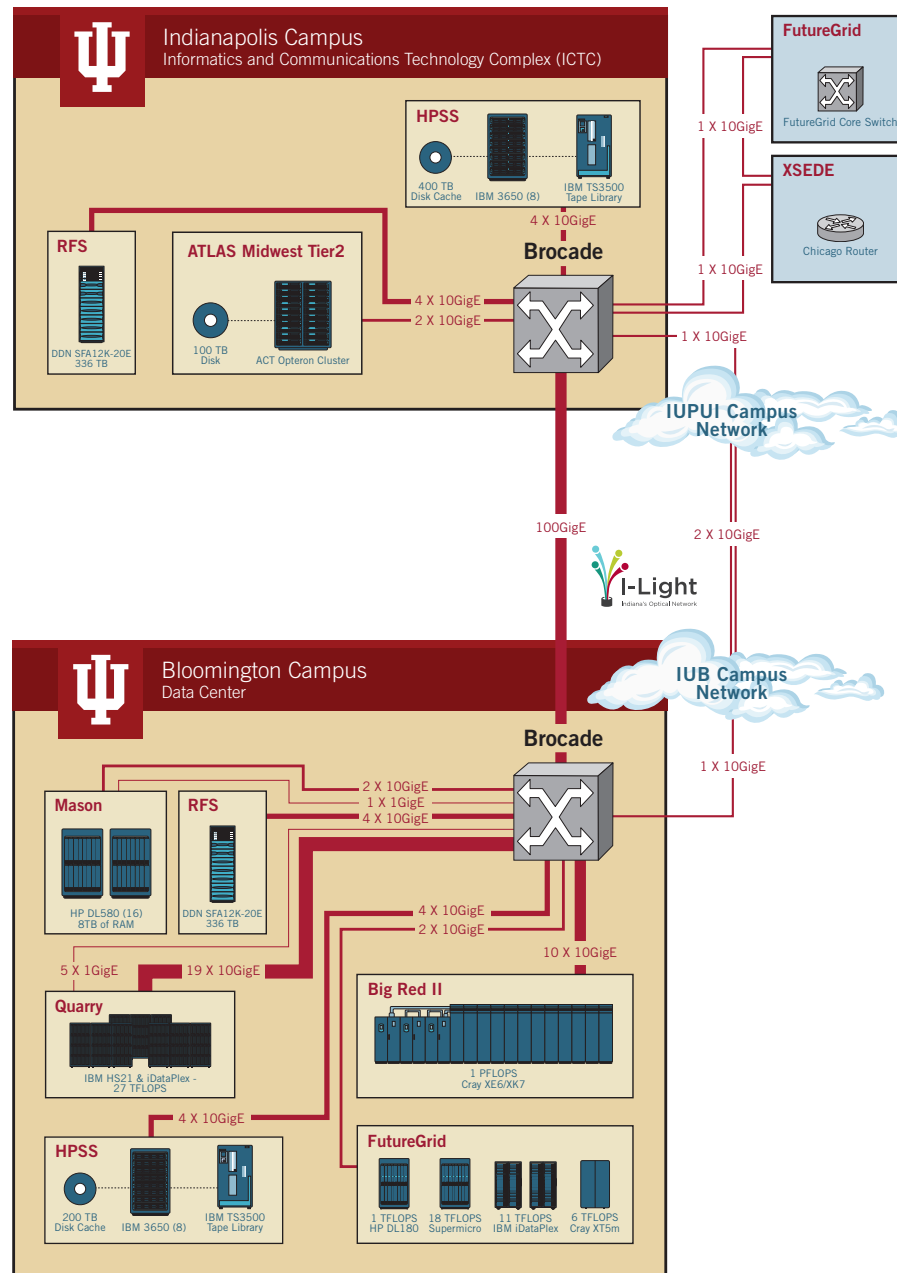
We identify needs, identify possibilities, and discover new ways to meet those needs, realize those possibilities, and create new ones. In so doing, we create, deploy, and support technology. **We are a technology-driving organization.** This is true of most of the parts of the computing center at IU.

Roughly 30% of personnel in Research Technologies are funded by external agencies



It wouldn't be an information
technology talk if I didn't talk
about some hardware...







Building community example: Big Red II Workshops

Big Red II entered production in Aug 2013

Three Big Red II focused workshops so far

- One pre-launch workshop, a week before the dedication
- Two hands-on workshops, one per research campus

Partnered with Cray, Nvidia and experts from national labs
Customized the workshops based on the campus/target audience

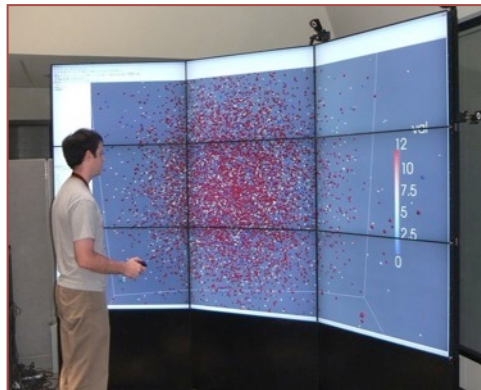
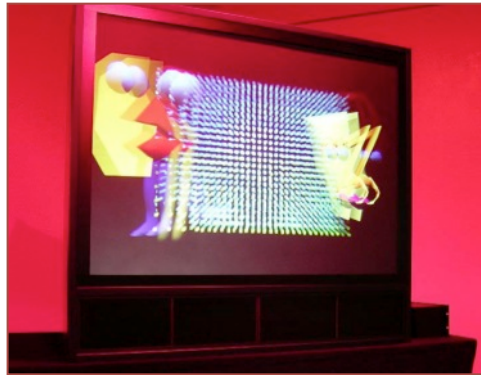
A great way to meet users in person, answer questions and get feedback

- In total, more than 300 people signed up for the three workshops



An Array of Viz Systems

30



The key issue here: perceived value, perceived ease of use



Some thoughts about industry trends

Cloud computing is a fad, but more than a fad as well – the energy efficiencies are compelling

If there is going to be cloud computing for universities

- Who runs it?
- Who supports it?
- Where are the data?

In the US there is essentially no data privacy, but:

- Data possession matters a lot
- For many applications, latency matters a lot
- So maybe we run academic clusters and clouds?

And we need to remember that you can't implement a system that you can't buy (Seymour Cray vs. the 17 year old boys of the industrialized nations – Cray lost...)



Mistakes we should try not to repeat

- Some times: too much tactic, not enough strategy (especially at times we were ahead of our faculty)
- Not saying goodbye quickly enough to staff who did not adhere to our goals & principles (*NB: US employment laws are different than German laws*)
- Sometimes promising too much first, figuring out how to deliver later (=> too much stress). You have to promise somewhat more than you know how to deliver or you simply won't be at the front edge of technology. The key is 'how much depends upon miracles'?

Things that went wrong that we will repeat as necessary

- Pursuing a strategy and having that strategy collapse for external reasons
- But we try to get good data from the industry and community to improve our guesses



Things the literature tells us

- Technology adoption choices are based on perceived value and perceived ease of use

Things we learned

- ***First and second derivatives matter much more than current location***
- ***Collaborations are important always, especially early on***
- Support and promote the staff who support the mission strongly
- Embrace (the good part of) your history, believe in and build organizational capacity.
- Build on your unique capabilities to differentiate your organization
- Your opportunity to distinguish your organization depends upon supporting current & future distinguished faculty and support students
- Work and responsibility flow to demonstrated competence
- Cloud computing is an important technology trend, and we should figure out how to deliver and support cloud services effectively



Contentions

- Information technology can be an important strategic asset for many universities.
- In the coming several years, universities are likely to sort themselves into categories of those that treat IT as a commodity and those that treat IT as a strategic asset.
- There are critical areas of research and development that require advanced IT, eScience, or cyberinfrastructure, and universities that wish to lead in these areas must invest in IT as a strategic asset.
- Everything has to work well – not just some areas

My conclusions:

- **IU's IT organization has shown that it can deliver a wide variety of excellent services, and in the process enhancing teaching, learning, research, and change the world at least a little bit.**
- **If we can do it, so can you**



Thanks!

- This talk represents the results of decades of work by thousands of staff of OVPIT, the groups that report to OVPIT and the predecessors of those groups, and the investment of hundreds of millions of dollars of taxpayer money from residents of Indiana and the US overall. All of these people deserve thanks.
- Thanks to the staff of OVPIT and especially PTI and the Research Technologies Division of University Information Technology Services.
- Thanks especially RT Directors / Senior Leaders (Eric Wernert, Matt Link, Therese Miller, Bill Barnett) and Managers (John Samuel, Stephen Simms, Mike Boyles, David Hancock, Richard Knepper, Matt Allen, Robert Quick, Robert Henschel, Marlon Pierce, Richard LeDuc, Robert Ping, Kristy Kallback-Rose, Ganesh Shankar, and Kurt Seiffert and George Turner, managers / tech leaders emeriti).
- Thanks to colleagues who contributed slides and data: Sue Workman, Rob Lowden. Jill Piedmont, Toni Usrey.
- Thanks to PTI colleagues: Beth Plale, Andrew Lumsdaine, Thomas Sterling, Martin Swany, Geoffrey Fox, Fred Cate, Von Welch.
- **Thanks specifically to Prof.-Dr. Christian Bischof for the invitation**
- **Thank to you for your attention**

I never mistake the leader for the team



Questions?

